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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
MENON, KRISHNAN S	

ART UNIT	PAPER NUMBER
1797	

MAIL DATE	DELIVERY MODE
12/12/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/774,778	DUDZIAK ET AL.	
	Examiner	Art Unit	
	Krishnan S. Menon	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 November 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4-8 and 10-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4-8 and 10-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claims 1,2,4-8 and 10-17 are pending as amended 8/8/08 in the RCE.

Claim Rejections - 35 USC § 102/103

1. Claims 1,2,4-8,10,11 and 15-17 are rejected under 35 U.S.C. 102(b) as being anticipated by, or in the alternative, under 35 USC 103(a) as being obvious over, Karau, et al (US 6,472,571).

Karau teaches a process for separation from a non-aqueous homogeneous or colloidal solution of a catalyst (abstract, column 2, lines 38-44), with a ceramic membrane having a hydrophobic coating of alkoxysilanes as claimed (see the silanes in column 3, lines 45-67).

Membrane porosity is less than 10 nm preferred (column 4, lines 1-10).

Ceramic is alumina, etc (column 4, lines 9-17)

Non-aqueous solvents taught; specific examples are THF and methanol. (tables 1 and 2, examples)

Temperature is in the range claimed – column 2, 3-10; more over, the range includes ambient, and unless the reference specifies a temperature, ambient temperature would be implied. Pressure required for the membrane process also would be implied in the reference, unless applicant can show criticality of the range.

Applicant's arguments traversing this rejection are not persuasive.

Interpretation of claim 1: Claim 1 recites in part relevant to applicant's arguments (prior to 8/8/08) traversing this rejection:

> Claim 1 **(currently amended)**. Process for the separation from a non-aqueous solvent of a **solid** substance which is present in said non-aqueous solvent in dissolved form, colloidal form, or in both of such forms, **without changing the molecular weight of said solid substance,** which comprises passing said non-aqueous solvent through a membrane having:

The emphasized part of the claim requires that the substance in dissolved or colloidal form is solid; and its molecular weight should not change during the claimed process, that is, its molecular weight should not change while being separated from the non-aqueous solvent using the membrane.

The reference teaches use of a ceramic membrane, as claimed, in recovering dissolved or colloidally soluble catalyst (column 2, lines 29–64). The reference does not teach synthesizing the catalyst, but only teaches using the catalyst for synthesizing organic compounds. The term 'increased molecular weight' in this reference appears to mean only having a *higher molecular weight*. The office does not believe that the catalyst is somehow growing in molecular weight in the process described in this reference. This is evident from the paragraph at column 4, lines 32-41. This paragraph teaches about catalyst "Catalyst having increase molecular weight made from dendritic, linear or variously branched homopolymer …", etc., which only explains the source for the catalyst. Column 5, lines 17-25 teaches the definition of the "increased molecular weight" as:

> *"In the context of the invention the term increased molecular weight refers to the increase in molecular weight of the catalyst under consideration by means of adsorptive or covalent bonding to appropriate organic or inorganic homogeneously or colloidally soluble support materials, e.g. nanoparticles (Zhao et al. Angew. Chem. 1999, 111, No.3)."*

Example 2 in the reference teaches the process as claimed, wherein a catalyst of molecular weight 38kD dissolved in THF is used to reduce tetralone to tetralol, which is circulated through a ceramic membrane. The claims of the reference also anticipate the instant claims.

Moreover, even if the reference had taught the catalyst molecules as 'growing' in molecular weight, it still would still be obvious to one of ordinary skill in the art at the time of invention to have this same process for separating the catalyst from the solvents as taught by this reference to contain the catalyst in the reacting vessel as taught by the reference. See column 1, lines 20-40.

Argument that the reference teaches only two layers is not persuasive: the reference has a ceramic support layer, an inter layer and a silane layer.

Argument that the Karau reference teaches catalyst of increased molecular weight (or larger molecular weight) is not commensurate in scope with the claim or the rejection. The claims are not limited by the molecular size of the catalyst. However, adding such a limitation to the claims also would not make the claims patentable – it would be inherent in the teaching of the reference, because the membrane of the reference would separate any dissolved substance whose molecular weight above the cut-off molecular weight of the membrane. The molecular weight of the Karau reference does not increase in molecular weight during the process.

2. Claims 12-14 are rejected under 35 USC 103(a) as being unpatentable over Karau as applied to claim 2 above, and further in view of WO 01/07157.

Claims differ from the reference in the teaching of the specific type of catalyst, i.e., organometallic catalyst from certain groups of the periodic table. However, the Karau reference teaches that the process of separating catalyst from reacting mixtures to retain them in the reactor is well known in the art, and the focus of the Karau invention is on the inorganic membrane for this purpose, as well stated in the column 1 of the reference. . WO teaches a process for separating solutes or colloids such as catalysts (page 7, 8: rhodium-organophosphite complex) from a non-aqueous solution. Membrane is ceramic (alumina, zirconia: page 10), with coating (the sub-nanoporous coating of metal or ceramic or inorganic polymeric material is a coating (page 7) (but WO does not teach the specific silane claimed). It would be obvious to one of ordinary skill in the art at the time of invention to ***combine these references to extend the use of Karau for the catalysts as taught by WO***. One would use the Karau membrane for such applications as taught by WO because of the advantages of Karau membrane, such as extremely high retention ability of the catalyst, as taught in column 2, lines 51-64.

In response to the prior (8/8/08 and before) argument of traversing this rejection:

> As argued above, employment of the membrane disclosed by Karau in the process of WO would yield loss of enablement of separating the catalyst from the liquid without having to increase the molecular weight of the catalyst. Therefore the combination of the teachings of Karau with WO can not overcome the discrepancies between Karau and Applicant's invention.

This argument is not persuasive. WO teaches pore size 15A or less for separating catalyst particles of size 30A or less – see page 9 of WO. The silane coating of Karau would provide the improvements as taught by Karau. Therefore, one would

modify Karau with the teaching of WO for the particle size, or WO membrane with the teaching of the silane coating of Karau for having an improved membrane for separating the particle size as in WO with the efficiency of Karau.

Response to Arguments

Applicant's arguments filed with the RCE of 8/8/08 have been fully considered but they are not persuasive. They are addressed below:

Rejection over Karau:

(1) Argument:

> Accordingly the combined limitation of at least three layers, each of one having a pore size different from the other two is not disclosed by Karau.

is not persuasive: see column 3, lines 37-44, which clearly describes that the layers have different pore sizes, and thus are asymmetric. This paragraph is evidence that the membrane of the reference is asymmetric. Backing layer is different from the interlayer, and interlayer can have additional layers and organic silanes.

Rejection over Karau in view of WO:

(2) Argument that the WO reference teaches away from having an asymmetric membrane is not persuasive. There is no teaching away in this reference. In addition, the rejection is about using the Karau membrane for the application taught by the WO reference, and thus even if there is any teaching away in WO, it is not relevant.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Krishnan S. Menon whose telephone number is 571-272-1143. The examiner can normally be reached on 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David R. Sample can be reached on 571-272-1376. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Krishnan S Menon/
Primary Examiner, Art Unit 1797